

Armada Robotics
FRC 2508
Build Handbook





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Overview

Introduction



Glossary

Term	Definition
775/Redline	A small brushed motor
80/20	80/20 is a type of slotted aluminum framing that is versatile and strong although is not torsion-resistant and is heavy compared to box section
Anderson Powerpole	A type of connector that comes in sizes rate for 15, 30 and 45 Amps, often used to connect speed controls to motors
Anderson SB50	The type of connector used on batteries
AndyMark	AndyMark is a Vendor that supplies a variety of mostly mechanical components
BOM	Bill of Materials, a list of all materials and components necessary for constructing a design or mechanism, includes prices, quantity, source, etc.
Bag Motor	A motor that is visually similar to a CIM but is much smaller
BaneBots	BaneBots is a vendor that provides specialty items
Bumpers	Bumpers are placed on the robot's frame perimeter and soften any collisions made with other items on the field, they are constructed with pool noodles and plywood
Button Board	A board used by the operator to control mechanisms on the robot
CAN	Controller Area Network, a communication protocol first used in the automotive industry that allows communication using a voltage difference between two wires(often yellow and green in FRC)
CIM	CCL Industrial Motor, a common motor used in FRC



COTS	Commercial Off The Shelf, components that are components easily purchasable from a vendor
CRIO	Compact RIO, the predecessor to the RoboRIO
CTRE	Cross The Road Electronics is a Vendor that provides electronic components
Churro	A shaft profile that fits into hex bores, has less torsion resistance than hex shaft
DigiKey	DigiKey is a Vendor that stocks mostly raw electronic components
Drivetrain	The part of the robot that allows it to move around
End Effector	The part of the robot that is directly used to complete objectives and directly interface with objects
Endgame	The final 30 seconds of the match
Falcon 500	A brushless motor that features an embedded motor controller(Talon FX), made by CTRE and VexPro
Lexan	A brand of polycarbonate used for building, not acrylic
Loctite	Loctite is a threadlocker used to keep bolts from becoming unfastened due to vibration
McMaster Carr	McMaster Carr is a Vendor who provides a variety of specialty components and materials
Mecanum Wheels	Mecanum wheels are wheels that have rollers angled at 45 degrees such that when placed in the right configuration in a drivetrain, a robot can move in any direction
Mini CIM	A smaller/shorter version of a CIM
NEO	The first certified brushless motor in FRC, unlike the Falcon 500 it requires an external motor controller such as the Spark MAX, made by Rev Robotics
NEO 550	A smaller version of the NEO



Omni-Wheels	Wheels that have rollers with an axis of rotation tangent to the edge of the wheel such that sideways movement is not restricted
PCM	The Pneumatics Control Module controls the compressor with a pressure sensing switch and controls any solenoids used
PDP	The role of the Power Distribution Board is to distribute power to all components of the robot from the main battery, the PDP can track current, voltage and power being distributed
PWM	Pulse Width Modulation, a control method where a 1-2ms pulse is sent every 20ms(50Hz) determining the power or position of an actuator, uses 3 wires that are red, black and white for power and signal
RSL	This Robot Status Light is the orange light that each robot has that indicates the state of the RoboRIO
Radio	The router used on the robot
Rev Robotics	Rev Robotics is a Vendor
RoboRIO	RoboRIO stand for Robot Reconfigurable Input/Output, it is the main controller used in the robot and made by National Instruments
Solenoid	A device that controls the flow of air by using an electromagnetic coil, connected to PCM
Spark MAX	A brushless motor controller made by Rev Robotics, often used in conjunction with NEOs
Swerve Drive	A type of drive that has independently controllable swiveling wheels
Talon FX	The integrated motor controller used in the Falcon 500
Talon SR	A PWM motor controller made by CTRE
Talon SRX	A PWM and CAN capable motor controller that has temperature sensing, current limiting and voltage sensing



	capabilities, the ability to use an encoder, and many more features made by CTRE
Toughbox Mini	A type of gearbox from AndyMark
VEXPro	VEXPro is Vendor that makes a variety of products including the Falcon 500 with CTRE
VRM	The Voltage Regulator Module is a small device that regulates the voltage from the battery to something more stable that more sensitive electronics such as the radio can use
Vendor	A supplier that meets FIRST Criteria
WAGO Lever-Nuts	Small connects that connect two wires together, often used for CAN wiring
WAGO Terminal	The ports on the PDP
WAGO Tool	A hardened tool used to connect wires to the WAGO Terminals on the PDP
WCD	West Coast Drive, a type of drive usually having 6+ wheels and gearboxes are attached rigidly to one of the wheels closer to the center of the robot, often very robust
Weidmuller Connector	Weidmuller connectors are the connectors used on the VRM/PCM